



FTA STANDARDS DEVELOPMENT PROGRAM: RAIL TRANSIT ROADWAY WORKER PROTECTION

Background

Transit rail Roadway Work Protection (RWP) is a critical component of a modern Rail Transit Agency (RTA). Each RTA is a highly complex system of equipment and human factors that interact on a daily basis under highly variable conditions that can come together to pose significant risks to the safety of workers on the right-of-way; when these risks are not properly addressed, they can lead to damaged equipment, severe injury, and death.

Objectives

The objective of this effort was to research and review existing standards and best practices and develop use cases, a risk assessment matrix, and high-level concepts of operations for transit rail roadway worker protection (RWP).

Findings and Conclusions

Research revealed continued issues with roadway worker protection, with some hazards unaddressed by existing technology and procedures/policies.

Effective RWP programs should include safety rules, practices, and methods that may lead to improved roadway worker safety and operational efficiency. TTCI developed a comprehensive document describing most transit rail use cases that should be helpful for transit agencies to use as benchmarks to identify most significant hazards encountered by roadway workers and possibly improve RWP policies and procedures. TTCI also developed a hazard assessment risk matrix designed to assist in determining the relative risk posed to roadway workers.

Also developed was a high level concepts of operations (CONOPS) of an RWP safety system (secondary warning devices) that is intended to reduce the risk of transit rail roadway workers while engaged in activities within the roadway. A gap analysis showed that technologies have limitations as secondary warning devices and also identified incapacitated workers and procedure non-compliance as areas that could be addressed by agency RWP programs.

Findings include the following:

- 70% of respondent transit rail agencies are using, to varying extents, the Federal Railroad Administration (FRA) RWP regulations contained in 49 CFR Part 214, Subpart C – Roadway Worker Protection. Most programs cover Individual Train Detection (ITD) (Lone Worker) protection methods.
- A literature review and NTD database review revealed several hazards that current rules and regulations do not fully address, including miscommunication, inattention, improper ITD assessment/application, and incapacitation.
- Incident reports documented multiple instances in which roadway workers were struck by a rail vehicle; a common causal factor was determined to be poor-quality job safety briefings at different operational and organizational levels.

- A hazard/risk assessment matrix incorporating the field of human factors and risk analyses based on various use cases and implementation of secondary RWP protection devices based on a high-level Concept of Operations (CONOPS) of an RWP safety system may help agencies to improve RWP.
- Available RWP technologies are designed to provide additional warning to workers and train crews, but they do not serve as primary protection. Overlaying these technologies may enhance RWP.

Benefits

This comprehensive document describing most transit rail use cases should be helpful for transit agencies to use as benchmarks to identify most significant hazards encountered by roadway workers and possibly improve RWP policies and procedures. Effective RWP programs can lead to improved roadway worker safety and operational efficiency.

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This research project was conducted by the Transportation Technology Center, Inc., a subsidiary of the Association of American Railroads. For more information, contact FTA Project Manager Raj Wagley at (202) 366-5386 or Raj.Wagley@dot.gov.

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